IPAO Lessons Learned

Risk Management Colloquium VI

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Agenda

- Introduction
  - Role of IPAO
  - Future Assessment Approach
- IPAO Lessons for Programs/Projects (5-7 slides)
  - Mitigation Planning poorly documented
  - Continuous Identification of risk not emphasized
  - Risk Definition
  - Risk Writing
  - Program/Project risk relationship
- Concluding Remarks

Introduction

- Role of the IPAO is to assure that NASA development efforts and missions operations are being planned and conducted on sound engineering and management bases with proper controls and management of risks.

- IPAO charters independent assessment teams to:
  - Conduct multi-disciplinary program/project reviews to assess the continued ability of programs and projects to meet commitments.
  - Report the results to the Agency Program Management Council, Mission Directorate, and other organizations as appropriate.
  - Recommend approval for projects to proceed to implementation.

- In April 2005 IPAO was transferred to the Office of Program Analysis and Evaluation from the Office of the Chief Engineer.
  - IPAO will review all Agency Programs, all category 1 and many category 2 projects as requested by mission directorates.
  - Renewed emphasis on review of technical implementation and the resultant risks to mission success.

Future Assessment Approach

- IPAO is concerned with identifying impediments to mission success
  - What can keep a project from launching [on time, on budget]?
  - What can prevent successful mission completion?

- Basic premise is that risk is determined by technical implementation
  - IPAO will be performing technical risk evaluation using structured tools.
  - Evaluate program/project posture against known risk criteria based on past experience.
  - Evaluate Relationship of test and verification planning to known risks.
  - Synthesize the relationships between mission success criteria, risk, and available resources.

- IPAO reporting will be designed to clearly convey our assessment of a project's risk posture.

IPAO Lessons Learned (Overview)

- Summary of relevant findings from review performed between 2003 and 2005.
- Emphasis is on continuous risk management (CRM) systems and their implementation.
- Findings were not uniform across agency, some more applicable to specific centers or Mission Directorates.
- IPAO Lessons for Programs/Projects
  1. Mitigation plans, planning and tracking systems often neglected.
  2. Risk documentation is sporadic or not maintained.
  3. Risk narrowly defined.
  4. Risk statement format incorrect or incomplete.
  5. Program/project risk relationship was not defined, programs did provide adequate guidance for project risk management (RM) philosophy

Lesson: Mitigation Planning

- Risk mitigation planning and tracking was often loosely controlled or neglected in risk management systems.
  - Mitigation plans are undocumented.
  - Mitigation schedule did not exist.
  - Progress towards risk reduction could not be measured.
  - No mechanism to ensure management visibility of risk reduction efforts.

- Risk mitigation is a central to effective risk management.
  - Assign single owner to each risk.
  - Develop and document risk mitigation plans which include:
    - Milestones
    - Schedule
    - Resources
  - Risk mitigation plans should be controlled at least at the same level as the risk tracking system.
  - Program/Project management regularly review mitigation progress.

Lesson: Risk Documentation

- Risk documentation is sporadic or not maintained.
  - Risk identification and documentation effort performed at outset then neglected.
  - Risk database primarily updated in conjunction with project milestone (PDR or external review).

- Ongoing risk identification is essential for CRM to be effective.
  - “Ownership” of risk management system must belong to project management.
  - Project management should provide active support for the CRM system through conduct and language.
  - All project personnel should be trained in CRM and their personal responsibilities.

Lesson: Risk Definition

- Risk is often narrowly defined resulting in limited scope of risk database.
  - Discipline specialists tendency to self-constrain.
  - Risks which require mitigation outside of project intentionally excluded.
  - Risk definition unclear with emphasis on technical.

- Risks should include anything which may prevent successful project completion.
  - Risks should not be “censored” during identification phase.
  - Project personnel should be encouraged to submit all risks identified.
  - RM plan should provide guidance on scope of risk identification effort.
  - Risk Manager should take active role in soliciting project support personnel to identify non-technical risks.

Lesson: Risk Writing

- Risk statement in the risk database do not use the "condition:consequence" format.
  - Incomplete statements
  - "If:then" statements

- The "condition:consequence" format establishes the basis for using CRM systems
  - Identifies *existing* states which may result in risks
  - Provides basic information for assessing likelihood and consequence for risk ranking.
  - Need to train project personnel to write risk statements.
  - Risk Manager should review risk database to ensure that risk statements are properly formatted.

Lesson: Program/Project Risk Relationship

- Program/project risk relationship is ambiguous.
  - Program did not provide guidance to projects for developing risk management plans.
  - No guidance for when risk should be elevated to program level.
  - Multiple RM systems in use within a single program.
- Clear RM guidance provides the basis for effective programmatic risk management and efficiency.
  - Program should develop RM plan which is used as model for individual project plans.
  - Program should develop clear guidelines for elevation of risk.
  - Program is responsible for risk ranking definitions
  - Program should identify or build common RM tools for use by projects.

Concluding Observations

- My personal observation is that there are two kinds of CRM systems:
  - Those responsive to external requirement.
  - Integral to PM as system for managing resource deployment.

- For CRM to be considered as a tool in the project management portfolio it need to address the needs of the PM:
  - Early identification of relevant risks before they become problems.
  - Assessment of risk magnitude vs. mitigation resources.
  - Tools to mange the deployment of mitigations.
  - Metrics to manage deployed resources based on effectiveness.

- When CRM is viewed as relevant to project management, risk management is incorporated into the management process.